No. III.—This depression apparently was developed in Dakota during the 5th and 6th instants, due to the prevalence of the southerly winds in the plateau west of the Mississippi river, that had been constantly blowing in that direction from the Gulf of Mexico since the 1st of the month. At midnight of the 6th, the winds immediately east of the Rocky Mountains had shifted to colder northwest. On the afternoon of the 7th, the lowest barometric pressure extended like a trough from Lake Superior to Kansas, and for the next two days opposing warm southerly and cold northerly winds prevailed on the opposite sides of this depression over the country from the Lake region to the Indian Territory. At 7:35 a. m. of the 9th, the barometer was lowest near Lake Ontario; from that time the depression moved rapidly to the northeast, and on the 10th, disappeared in the Gulf of the St. Lawrence. This depression was chiefly remarkable for the destructive tornadoes that occurred in the West; for the heavy rain-fall in Kansas, occasioning destructive floods in the Missouri valley. The heaviest rain-falls accompanying this depression were in its southwest quadrant, occurring after the veering of southerly winds to west and north.

No. IV.—The barometer fell on the 10th, in the South Atlantic and Gulf States, to the south of high area No. III; it was accompanied by general and heavy rain-fall in those districts, but by slight changes in temperature and no high winds. There is no evidence of the translation of this area, and no path is charted.

No. V.—On the 13th, the winds in the Northwest shifted to southeast in advance of depression No. V, whose centre at 7.35 a. m. of the 14th is charted in Dakota. On the afternoon of the 15th this depression extended in a barometric trough from Lake Superior to west Texas, with opposing north and south winds. The rain-fall was light and unusually near the centre of the depression. The storm was followed by a marked fall in temperature; the centre is charted at 4.35 p. m. of the 15th, in Lake Superior; from that time there was no apparent translation of the depression. The barometer remained low in this region until the 17th, when its place was filled by the depression charted as low barometer No. VI.

No. VI.—This depression was probably developed in British America, east of the Rocky Mountains, during the 15th and 16th, in advance of the high pressure that was on the North Pacific coast at that time. On the 18th, this depression moved in a southerly direction, and at 4.35 p. m. the barometer was lowest in Southern Michigan; it remained lowest in the Lower Lake region until the 19th, and then moved rapidly up the St. Lawrence valley, with a track too indefinite to chart after the 20th instant. This was one of the most southerly storms of the month, and after the 17th, it became the best defined as a cyclone; it was rapidly followed by high area No. IV. During its progress very heavy and frequent rains fell east of the Mississippi river. There was a decided deficiency of precipitation in the Northwest. The rain fell in the greatest abundance in the southwest quadrant of the depression, as is frequently the case in the summer months.

No. VII.—A continued trough-like depression existed in Manitoba, Dakota, and the extreme Northwest from the 24th of July until the 27th, in rear of high pressure No. IV; it had no track that, with the data in the possession of this office, can be charted up to that time, but on the morning of the 27th its centre can be placed to the east of Pembina. It moved slowly to the southeast in the Lower Lake region, and, on the 29th, took a path slightly to the north of the St. Lawrence river, and probably disappeared off the coast of the British maritime provinces in the early days of August. It was attended by numerous local but not heavy rains over the Lake region and New England States; heavy rain fell at the same time in Texas between the high area in the Gulf States and the high pressure in rear of this depression, moving in a southerly direction over the plains.

No. VIII.—At 7:35 a. m. of the 28th, a marked fall of the barometer took place in Manitoba and Dakota. By the 31st the winds immediately east of the Rocky Mountains had shifted to colder northwest. By the end of the month the depression was not sufficiently defined to have its track charted. But little rain fell. Its further history belongs to the August REVIEW.

Vessels Experiencing Storms at Sea.—4th, off Chincoteague, a revolving gale; 21st, N. 50° 35′, W. 19° 25′.

TEMPERATURE OF THE AIR.

In General.—The general distribution of temperature for the month is shown by the isotherms on chart No. II. A comparison with the averages for July during the past seven years shows that the temperatures have been about normal in the St. Lawrence valley, New England, Ohio valley, Tennessee and Upper Mississippi valley; slightly above the average in the Middle, South Atlantic and Gulf States, Lake region and Pacific coast.

Monthly mean temperatures, at special points, have been as follows: Mt. Washington, 49°.2; Pike's Peak, 39°.1.

Maximum and Minimum Temperatures.—Maximum temperatures, at Signal Service stations, above 95°, were reported as follows: 96°, Bocrne, Cheyenne, Galveston, Keokuk, La Crosse, Lynchburg, Memphis,

Nashville, New Orleans, Pittsburgh and Yankton; 97°, Fort Gibson, Indianola, St. Louis and Wilmington; 98°, Salt Lake City, Smithville and Washington; 99°, Denver, Fort Sill, Norfolk, Omaha, St. Marks, Tybee Island, Vicksburg; 100°, Augusta, Charleston, Concho, Denison, Jacksonville, Mason, Mobile and Savannah; 101°, Dodge City; 102°, Corsicana and Montgomery; 103°, Sacramento; 104°, Laredo and Winnemucca; 106°, Brackettville and Boise City, Idaho; 107°, North Platte; 109°, Fort Sully and Rio Grande; 112°, Maricopa Wells; 113°, Yuma. Minimum temperatures below 40°: 23°, Pike's Peak; 34°, Mt. Washington; 37°, Winnemucca; 38°, Virginia City. The maximum temperatures for the month may be divided into three periods, the first of which occurred from the 4th to the 8th, and was generally distributed over the country to the southwest of a line drawn from North Carolina to Minnesota; the second occurred from the 15th to the 18th over the Lake region, Upper Ohio valley and Maine; and the third from the 25th to the 30th in the Atlantic coast States, Lower Lake region and lower Michigan.

Ranges of Temperature.—The largest diurnal ranges have been: 36° at Yankton and 38° at Pembina, 28th; 39° at Breckenridge, 29th, and Sacramento, 7th; 42° at Brackettville, 22nd; 54° at Winnemucca, 28th.

The largest monthly ranges have been: 51°, Detroit, Dodge City and Sacramento; 52°, Yankton and Stockton; 53°, Cheyenne; 55°, Brackettville and Maricopa Wells; 61°, Fort Sully; 62°, North Platte; 65°, Campo; 67°; Winnemucca.

Frosts were observed as follows: 30th and 31st, Camp Halleck, Nev.; 31st, Coalville, Utah, killing tender vegetation. Frosts at Summit, Col., nightly.

Ice.—The formation of ice, rather than frosts, was reported from Fort Sanders, Wy. Ty., on the 31st. Ice at Summit, Col., quarter of an inch thick night of July 31st and August 1st.

PRECIPITATION.

In General.—The general distribution of rain for the month is shown on chart No. III. The region of heaviest rain-fall is seen to extend along the East Gulf, South and Middle Atlantic coasts, while over the entire country east of the 100th meridian the rain-fall has been quite evenly distributed. Areas of light rain-fall are, however, seen to exist in the interior of South Carolina and Georgia; in Texas and Indian Territory; in lower Michigan and Canada; and from eastern Iowa westward. Rains have fallen at almost all stations situated in the Rocky Mountain region and along the Pacific coast, but the amounts reported are generally quite small. The table of comparative values, given on chart No. III, shows the rain-fall to be near the normal in nearly all the districts, excepting in the Middle and South Atlantic States, where an excess of one inch and a quarter is reported, and in the St. Lawrence valley, where a deficiency of about three-fourths of an inch is reported.

Special Heavy Rains.—The following are the most notable cases of heavy rains that have been reported 1st, North Volney, N. Y., 2.90 inches; Biddeford, Me., 8 inches in 3 hours; New London, Conn., 1.15 in 2½ hours; Oswego, N. Y., 3.57 in.; Utica, N. Y., heaviest rain-fall for years. 5th, Breckenridge, Minn., 2.02 inches in 1½ hours. 7th, Marquette, Mich., 1 inch in 30 minutes, Breckenridge, Minn., 2.00 in. in about 20 minutes during a hurricane. 8th, La Crosse, Wis., 2.69. 10th, Sandy Springs, Md., 0.60 inch fell in 15 minutes; Savannah, Ga., 2.80 in 4½ hours. 15th, Guttenburg, Iowa, 2.02 inches fell in 35 minutes; Cleaveland, Tenn., 3.1 inches fell in 1 hour 20 minutes. 16th, Alpena, Mich., 1.36 in.; Brackettville, Tex., 2.49 in.; Merom, Ind., 5.91 inches. 17th, Independence, Kan., 3.37 inches. 18th, Ft. Sill, Ind. Ter., 1.74 in.; Louisville, Ky., 2.64 in. 20th, Atlantic City, 2.14 in.; 20th, 21st and 22d, Cape Lookout, N. C. 5.69 in.; Cape Hatteras, 6.01 in.; Charleston, 7.33 in.; Wilmington, N. C., 6.87. 24th, Baltimore, 1.28 in 1 hour. 26th, Ft. Sill, Ind. Ter., 1.97 in. Rochester, N. Y., 2.05 in. 29th, Ft. Whipple, Va., 2.34. 30th, Trenton, N. J., 1.00 inch fell in 40 minutes; Hulmerville, Pa., 1.15 inch fell in 35 minutes; Bismarck, Dak. Ter., 0.45 in. in 30 minutes; 31st, Iowa City, Iowa, 2.50 inches fell in 1 hour.

Small Monthly Rain-falls.—The following stations report less than 0.5 of an inch: in California, Arizona and the Rocky Mountain region; San Francisco, .02; Sacramento and San Diego, .00; Wickenburg, .18; Stanwix, .13; Winnemucca, .27; Salt Lake City and Fort Fred Steele, .08; Cheyenne, .43; Denver, .33.

Large Monthly Rain-falls.—Rain-falls to the amount of seven inches or more were reported as follows: Cape Lookout, 8.78; Charleston, 10.21; Keokuk, 7.06; Mt. Washington, 11.27; Norfolk, 7.97; St. Marks, 8.72; Wilmington, 9.35; Cape Hatteras, 9.80; Milford, Del., 7.90; St. Mary's, Ga., 7.65; Milford, Ind., 7.69; New Orleans, 7.50; Trenton, N. J., 7.40; Vineland, N. J., 7.12; Moorestown, N. J., 7.43; Goldsboro, N. C., 7.56; Weldon, N. C., 7.76; Attaway Hill, N. C., 7.18; Hulmeville, Penn., 9.38; Cleaveland, Tenn., 7.90; Prospect Hill, Va., 8.90; Utica, Wis., 8.30.

Droughts.—Droughts, injurious to vegetation, have been reported as follows: Illinois—Carbondale,